

Increasing efficiency in public procurement in Slovakia: Report on good practices in green procurement

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1 Introduction

This report provides an analysis and summary of good practices for the use of green public procurement (GPP), the purchasing of products and services that are less environmentally damaging when taking into account their whole life cycle. Environmental considerations in public procurement can relate to a broad range of issues, including pollution, carbon footprint, water use, biodiversity, climate change, waste reduction, renewable energy, and the circular economy.

Focusing on four selected product categories where governments are leveraging public procurement to improve environmental performance, the report highlights good practices in policies, programmes and procedures throughout the procurement cycle. The four product categories (laptop and desktop computers, textiles, food and catering services, and buildings) were selected based on specific interest from the Public Procurement Office of the Slovak Republic, due to their potential environmental impact and the diverse set of approaches and examples to GPP they provide. For each product category and phase of the procurement cycle, the report provides selected good practices and identifies elements such as procurement objectives, results and lessons learned. Along with demonstrating the tangible results of a GPP approach, the case studies can also provide insights into challenges and areas for improvement.

The report first provides an overview of the concept and use of GPP informed by the results the OECD's *2022 Survey on Green Public Procurement*. This is followed by a summary of the specific environmental impacts of the four selected product categories and the use of GPP to address those impacts. The report then provides a brief review of the current status of GPP in the Slovak Republic, including the legal and regulatory framework, key policy measures, and monitoring and evaluation efforts. Subsequent sections provide case studies for each of the main phases of the procurement process (pre-tender, tendering, post-tender). While the case studies are focused on particular phases of the procurement process, they represent multidimensional approaches to GPP that in many cases comprehensively address the full procurement cycle. Providing concrete examples of how governments at the national, regional and municipal level are applying GPP, the case studies are drawn primarily from European Union member states to ensure relevancy with the Slovakian context.

Governments are increasingly using procurement to reduce their environmental impact

GPP is the procurement of goods, services and works with a reduced environmental impact relative to goods, services and works with the same primary function that would otherwise be procured (European Commission, 2008^[1]). Along with reducing environmental impacts, GPP can be cost-effective, particularly if the full life-cycle costs of a contract are considered, while also driving innovation by creating incentives for suppliers to develop environmentally friendly solutions (European Commission, 2016^[2]).

GPP attempts to increase the demand of green products in order to shift the market towards sustainability. However, the ability to support long-term uptake of green solutions can be disrupted by factors such as a lack of information on green products, limited interest from buyers and the absence of incentives for suppliers. Understanding the pros and cons of switching conventional purchases to green ones is paramount for the successful implementation of GPP (OECD, 2015^[3]). The *OECD Recommendation on*

Public Procurement includes principles to assist governments in achieving the right balance between the primary procurement objective, delivering goods and services in a timely, economical and efficient manner, and secondary policy objectives (see Box 1.1).

Box 1.1. OECD Recommendation on Public Procurement: Principle of Balance

The OECD Recommendation on Public Procurement advises adherents to recognise that any use of the public procurement system to pursue secondary policy objectives should be balanced against the primary procurement objective.

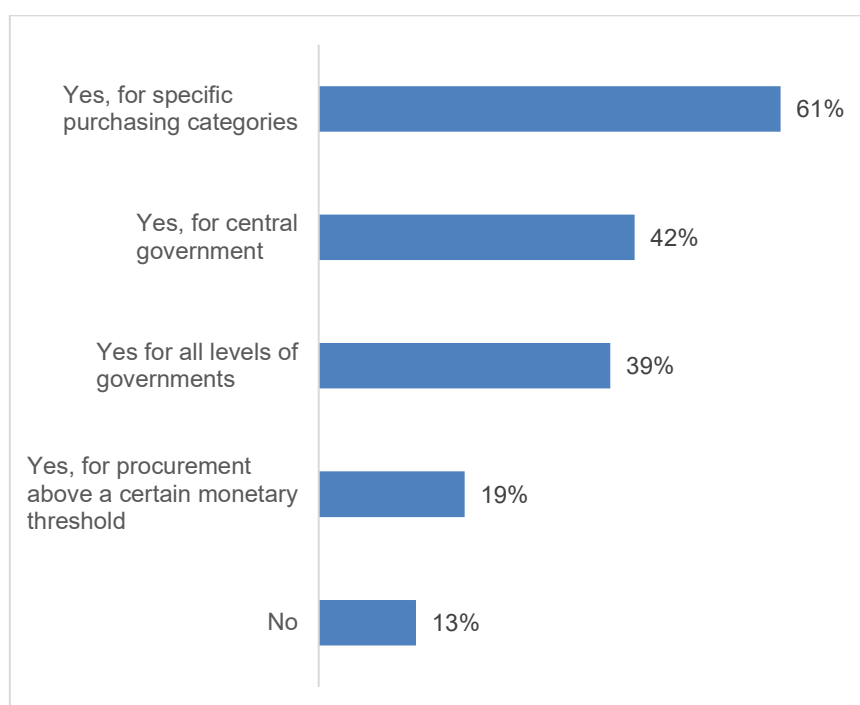
To this end, Adherents should:

- i. Evaluate the use of public procurement as one method of pursuing secondary policy objectives in accordance with clear national priorities, balancing the potential benefits against the need to achieve value for money. Both the capacity of the procurement workforce to support secondary policy objectives and the burden associated with monitoring progress in promoting such objectives should be considered.
- ii. Develop an appropriate strategy for the integration of secondary policy objectives in public procurement systems. For secondary policy objectives that will be supported by public procurement, appropriate planning, baseline analysis, risk assessment and target outcomes should be established as the basis for the development of action plans or guidelines for implementation.
- iii. Employ appropriate impact assessment methodology to measure the effectiveness of procurement in achieving secondary policy objectives. The results of any use of the public procurement system to support secondary policy objectives should be measured according to appropriate milestones to provide policy makers with necessary information regarding the benefits and costs of such use. Effectiveness should be measured both at the level of individual procurements, and against policy objective target outcomes. Additionally, the aggregate effect of pursuing secondary policy objectives on the public procurement system should be periodically assessed to address potential objective overload.

Source: (OECD, 2015^[4])

Across the OECD, governments are increasingly leveraging their buying power (12% of GDP on average) to achieve a diverse set of policy goals, including reducing the environmental impact of the goods, services and works they procure (OECD, 2022^[5]). The findings of the OECD's *2018 Survey on the Implementation of the Recommendation on Public Procurement* confirmed that governments were using procurement as a key tool to address environmental challenges. The survey showed that 64% of surveyed countries were integrating award criteria relating to GPP into public procurement procedures, at least "seldom" (about 25% of the time) or "sometimes" (about 50% of the time) (OECD, 2019^[6]). In 2022, the OECD carried out a survey focused on GPP practices and policies. In this more recent survey, 96% of OECD countries reported having an active national policy or strategic framework on GPP, and 87% indicated that procurement is identified as a tool in national commitments on climate action. In many cases, countries make GPP use mandatory: only 13% of respondents indicated that the use of GPP was not a requirement under at least some circumstances (see Figure 1.1).

Figure 1.1. Mandatory requirement to use GPP in specific instances



Note: Amounts do not total to 100% as countries were able to select multiple responses

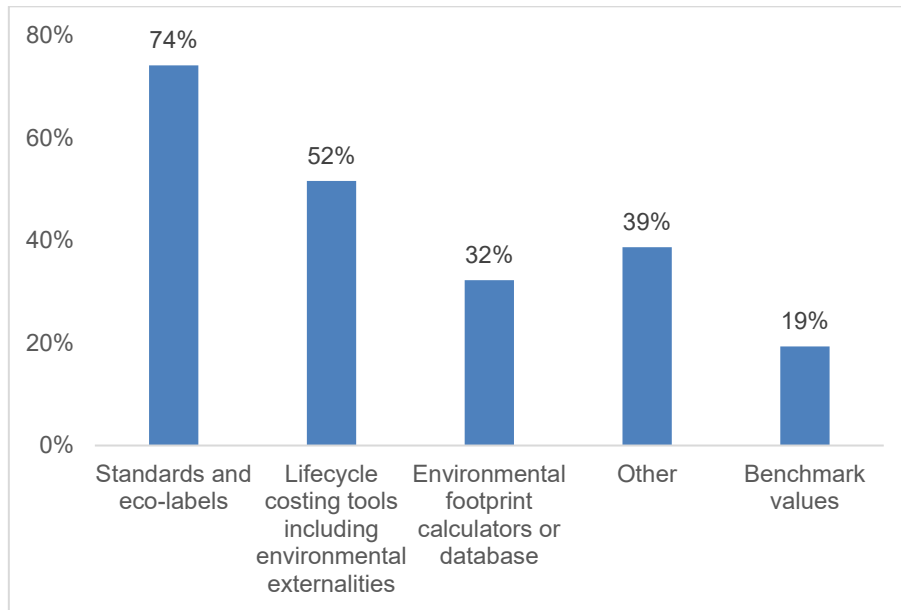
Source: (OECD, Forthcoming^[7])

However, while public procurement frameworks across the OECD generally provide a legal basis for this focus on the environment, the practical implementation of GPP approaches is more complex. Procurement practitioners cite a lack of political support, negative perceptions (such as sustainable solutions being more expensive), lack of expertise, and a lack of practical tools and training as the main obstacles to more widespread adoption (OECD, 2022^[5]).

For example, the use of life-cycle costing (LCC) remains low across many OECD countries. LCC considers all costs incurred during the lifetime of the product, work or service. This can include the purchase price and associated costs, the operating costs, such as energy and water use, and end of life costs, such as disposal or decommissioning. It can also include the cost of externalities, such as CO₂ emissions (European Commission, n.d.^[8]). By moving beyond the initial purchase price and evaluating all other significant costs over the entire life of works, supplies or services, a comprehensive LCC analysis can deliver better environmental outcomes at a lower price. Nevertheless, a recent mapping by the OECD showed that while almost all analysed countries had green or sustainable procurement strategies, slightly less than half had introduced LCC tools (OECD, 2022^[5]).

Disseminating practical examples and case studies can help public buyers apply GPP approaches and support increased uptake (OECD, 2022^[5]). Because GPP requires specialised knowledge and skilled teams, tools such as manuals, training and guidance can build the capacity of the public sector to use procurement strategically (OECD, 2015^[3]). In the 2022 *OECD Survey on Green Public Procurement*, countries reported developing a diverse set of tools to support the implementation of GPP (see Figure 1.2). Slovakia reported having both lifecycle costing tools which include environmental externalities and standards and eco-labels (OECD, Forthcoming^[7]).

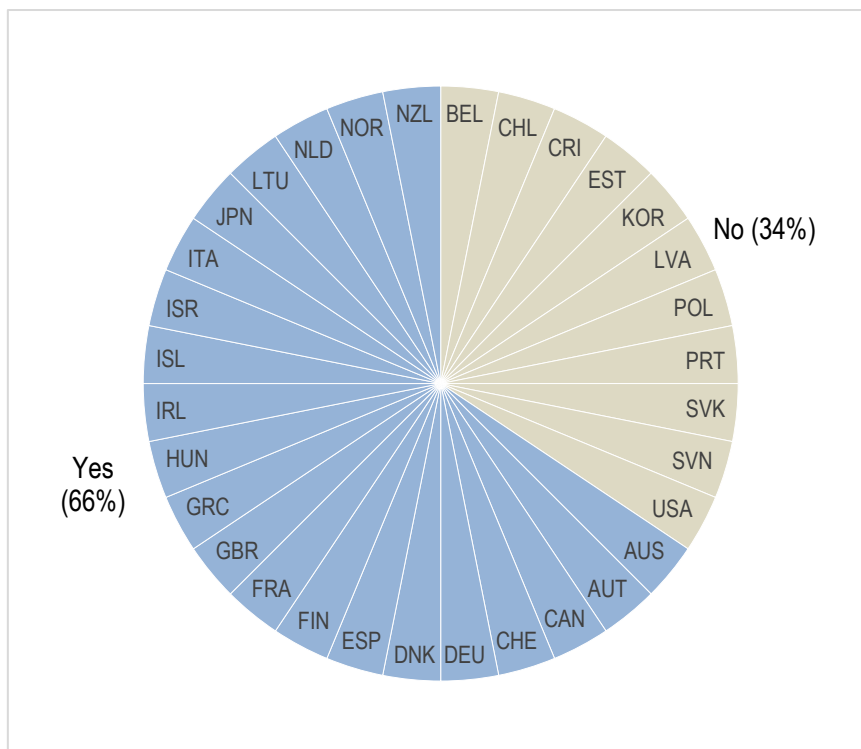
Figure 1.2. National tools available to support the development of GPP tenders



Note: Amounts do not total to 100% as countries were able to select multiple responses
 Source: (OECD, Forthcoming^[7])

Approximately two-thirds of respondents to the survey also reported providing a platform for contracting authorities to share experiences using GPP (see Figure 1.3).

Figure 1.3. Existence of a platform in which contracting authorities can share experience



Source: (OECD, Forthcoming^[7])

The report focuses on four product categories where governments are using public procurement to advance green outcomes

Laptop and Desktop Computers

When public buyers procure laptops and desktops, they typically follow one of three models: purchase of devices only; purchase of devices and services such as maintenance, repair and upgrades; and purchase of Devices as a Service (DaaS), where the public buyer pays a subscription fee to lease hardware and management services (Alfieri et al., 2021^[9]). Regardless of the procurement model, electronic equipment has a heavy environmental footprint due to the raw materials used and the energy they consume, as well as their disposal at end of life (European Commission, 2016^[2]). Concerns include energy performance, material efficiency (e.g. durability, reparability, recyclability) and the use of chemicals. Supply chains for computer equipment are long and complex, making it challenging for public buyers to ensure compliance with environmental standards in manufacturing. Measures such as technical specifications, award criteria and contract performance clauses can help to increase transparency and establish due diligence as standard practice (European Commission, 2020^[10]).

The use of standards and labels can facilitate the environmental standards such as energy consumption, as they avoid the need to define appropriate qualifications, award criteria and contract clauses. Labels and standards can be used to verify a product's 'green' credentials, as a minimum requirement, or as a method to create sustainability criteria (Baron, 2016^[11]).

The life cycle stages of electronics with the most significant environmental impacts are generally manufacturing and use, particularly when analysing energy consumption and global warming potential (Alfieri et al., 2021^[9]). However, while the primary focus has been with the energy consumption of products during the use phase, growing consumption of the products themselves has also led to efforts to increase reuse and recycling possibilities (OECD, 2010^[12]). For example, using laptops in a secondary application has been shown to result in a 40% reduction in GHG emissions (Alfieri et al., 2021^[9]). About 53.6 million metric tonnes (Mt) of e-waste were generated in 2019, growing at a rate of approximately 21% in the five years before 2019. Only 17.4% of global e-waste is formally recycled, including 43% in Europe (van der Merwe and Brugger, 2021^[13]). Reflecting these concerns, OECD countries are updating their procurement frameworks and practices to reinforce circularity (OECD, 2022^[14]). The increased demand for portable electronics has also stimulated the market of battery recycling, which can include measures such as requiring tenderers to provide a service for re-use and recycling and collection services (take back systems) (Alfieri et al., 2021^[9]).

Textiles

Textile procurement can involve complex institutional arrangements and requirements. Contracting authorities may procure a wide range of textile products and services, such as laundry, under a single contract. For example, in the health care sector, a typical hospital framework can include hundreds of textile products (e.g. bed linen, patient clothing, staff uniforms) and may be procured by a single institution or a group of institutions (Watson and Fisher-Bogason, 2017^[15]).

The environmental impacts of textile production and use are significant and include the use of hazardous fertilisers and pesticides during the cultivation of natural fibres, effects due to substances used during the processing of intermediate and final textile products, GHG emissions from manufacturing and washing and drying, as well as early product failure which can result in the waste of resources and their landfilling or burning with potential for hazardous air and water emissions. The impact of different lifecycle phases depends on the environmental indicator being used (Dodd and Gama Caldas, 2017^[16]).

The production of raw materials and the manufacturing of textiles consume large amounts of resources across a wide geographic area. Long supply chains can present challenges for public buyers that want to

engage in cleaner processes, and it can be particularly difficult for SMEs to establish and monitor requirements on complex issues such as chemical use in production (Miljøstyrelsen, 2018^[17]). Transportation has climate change impacts, as well as generating packaging waste (Nikolina Šajn, 2019^[18]). In 2020, textile production generated 121 million tonnes of GHG in the EU (European Environment Agency, 2022^[19]). During the use phase, textiles can have a large environmental impact due to the water, energy and chemicals used in washing, drying, and ironing, as well as the discharge of micro-plastics (Nikolina Šajn, 2019^[18]).

One critical way to reduce environmental impacts is to extend use life as far as possible. Choosing a durable fibres, colours which best tolerate laundering and use by patients and staff and setting criteria for laundry services which reduce stress on the textiles can all extend use. End-of-life choices are also often an issue in environmental decisions. Ensuring that a textile service provider recycles their textiles at end-of-life can add some benefits, but this is not as important for the overall environmental impact as extending the use phase (Watson and Fisher-Bogason, 2017^[15]).

Food and Catering Services 🍏

Food can be procured directly from producers, manufacturers, wholesalers or importers or can form part of the service provided by the contracted catering firms (Boyano Larriba et al., 2019^[20]). Procurement can be centralised, with one entity conducting procurements for a number of sites, or decentralised, with each site conducting procurements for itself (StratKIT, 2020^[21]). Food and catering services can often have highly demanding technical specifications (e.g. stringent specifications for food products, strict delivery deadlines) (European Commission, 2020^[10]).

Food systems account for a significant share of global environmental pressures such as GHG emissions, water pollution, and biodiversity loss (Deconinck and Hobeika, 2022^[23]). Agriculture and food production has a high environmental impact in terms of carbon emissions, soil and water pollution, and waste. Environmental impacts can result from the use of pesticides and fertilisers, soil degradation and loss of biodiversity, energy and water use in food manufacturing, and waste generation (European Commission, 2008^[22]). The transport, packaging and storage of food products can also have a significant footprint (StratKIT, 2020^[21]). Within the food category, different products can have very different impacts: meat and meat products have the greatest environmental impact, followed by dairy products (European Commission, 2008^[22]).

Environmental impacts along food supply chains are affected by a wide range of actions by both private and public actors. Some only indirectly affect food supply chains (e.g. a shift towards cleaner electricity will indirectly reduce environmental impacts of all sectors) while others involve only a specific stage of the food supply chain (e.g. agricultural and agri-environmental policies) (Deconinck and Hobeika, 2022^[23]).

Organic production, choosing more sustainable alternatives, and reducing waste are all measures with the potential to reduce environmental impacts. GPP approaches can include specifying minimum percentages or awarding points for the use of organic or in-season food, contract clauses on minimising waste, and applying selection criteria based on the implementation of environmental management measures (European Commission, 2016^[2]).

In general, the majority of the environmental impacts from food products and catering services arise at the primary production stage and in some cases also at the processing stage. However, the lifecycle stage with the greatest environmental impact also depends on the product category. For example, fish and seafood, depleting fish stocks, fossil fuel use in fishing vessels and production and use of chemical fertilisers and pesticides for fruits and vegetables and breads and cereals. At the catering service stage, energy and water use are important contributors to environmental impact, as well as waste generation and management (Boyano Larriba et al., 2019^[20]).

Buildings

The green procurement of buildings needs to address environmental factors including those related to the use of the building, such as energy consumption, and those related to its construction, such as emissions associated with the manufacturing and transportation of building materials. These can be conflicting, such as when increasing energy efficiency requires the use of insulation materials in construction with a higher environmental impact (Dodd, Garbarino and Caldas, 2016^[24]). Buildings and construction account for nearly 40% of global energy-related CO₂ emissions, including about 28% of total final global energy consumption and 30% of end-use sector CO₂ emissions from the operational energy used to heat, cool and power them (including indirect emissions from the electricity and heating). Emissions are also rising, with global energy-related emissions from the building sector increasing by 25% from 2000 to 2017 (OECD, 2022^[25]).

Evidence for the life cycle environmental impacts of office buildings indicates that the most significant impacts are generally related to energy use during building occupation. The provision of services within buildings is also a central driver of energy demand and emissions, mainly from space and water heating, cooling and cooking (OECD, 2021^[26]). Thermal efficiency, building orientation, water use, together with a building's depth and layout, all play a role in influencing heating, cooling, lighting and ventilation requirements (Dodd, Garbarino and Caldas, 2016^[24]).

Nevertheless, energy consumption and carbon emissions need to be considered over the entire life cycle of a building, not only during the operational phase (OECD, 2022^[25]). In general, the longer the lifespan of a building and its component systems, the lower the total life cycle impacts (Dodd, Garbarino and Caldas, 2016^[24]). The embodied carbon of buildings – all the CO₂ emitted in producing materials in the life cycle of buildings – includes all the emissions from the construction materials and building process and from deconstruction and disposing of the buildings. The embodied GHG emissions due to construction industries are approximately 5% to 10% of the entire energy consumption in developed countries. These rates vary greatly depending on the country and region, but the carbon footprint of each phase of a building's life cycle should be taken into account (OECD, 2022^[25]).

The production and transportation of construction products can also have significant environmental impacts. These relate to the resources used and the energy use, emissions and ecosystem impacts associated with raw material extraction, processing and transportation. Resource use is influenced by the amount of waste generated during product manufacturing, construction on-site and demolition processes, which can be significant as a proportion of the overall material flows on a construction site. Transport of building materials such as aggregates is generally by truck, which results in fuel-related emissions. This highlights the importance of designing and specifying for resource efficiency, with the most significant building elements to address being the floors, roof, structure and external walls. In this respect the recycling and re-use of construction materials and products, as well as whole building elements, can contribute to reducing environmental impacts and development of a circular economy (Dodd, Garbarino and Caldas, 2016^[24]).

An overview of the current state of green public procurement in Slovakia

The Public Procurement Office (PPO) is the central state administration body for public procurement in Slovakia. In exercising its powers, the PPO implements a public policy of open communication with the aim of promoting the public interest in public procurement, which is mainly the economical and efficient use of public funds, fair competition, and non-discrimination in public procurement. To this end, it also carries out training and educational activities.

In 2019, the Government of the Slovak Republic adopted the Strategy of the Environmental Policy of the Slovak Republic until 2030. Prepared by the Ministry of the Environment, the Strategy aims to achieve

better environmental quality and sustainable circulation of the economy based on rigorous environmental protection and limited use of non-renewable natural resources and hazardous substances. It includes a target of 70% share of GPP both in total number of contracts and total value by 2030.

Slovakia's National Action Plan for Green Public Procurement (2016 – 2020) identified GPP as an important tool for environmental protection and committed to creating favourable conditions for its application. The aim of the Action Plan was to set the direction of GPP by establishing measures and activities to meet its ambitious GPP goals, including achieving a 50% share of GPP contracts implemented by government bodies in specific product categories. In 2021, the Ministry of Environment, with support from the PPO, began preparing a new National Action Programme for GPP to 2030.

The Slovakian procurement framework supports GPP

A strong GPP framework can be a powerful tool in advancing the purchase of green products and removing obstacles to the consideration of environmental factors in procurement (OECD, 2015^[3]). The Slovakian Public Procurement Act (PPA) defines environmental considerations as those related to the subject matter of the contract that reduce the negative effects or prevent the negative effects of procured goods, works or services on the environment during any phase of their life cycle, contribute to environmental protection, promote climate change adaptation or promote sustainable development, in particular through:

- Reducing air, water, and soil pollution
- Reducing GHG emissions
- Forest protection
- Waste prevention or reduction
- Recovery or recycling of used materials
- The use of renewable resource
- Increasing the efficient use of natural resources

In preparing tenders, the PPA allows for the use environmental considerations in three areas:

- **Participation conditions** (§36 of the PPA): the Act allows buyers to require the submission of a certificate issued by an independent body certifying compliance with the requirements of the environmental management system standard by referring to the EU Environmental Management and Audit Scheme, or another environmental management system under a special regulation or another environmental management system based on the relevant acts of the EU or international standards. Buyers must also recognise equivalent environmental management system certificates issued by the competent authority of an EU member state. If the tenderer has not been able to obtain the relevant certificate within the given time limits, the buyer must also accept other evidence of environmental management measures that can demonstrate that the measures proposed are equivalent to those required under the relevant environmental management system or standard.
- **Contract subject description and contract conditions** (§42 of the PPA): Buyers can include environmental characteristics when drawing up a description of the subject of the contract based on performance and functional requirements. Buyers may also specify the conditions of performance of the contract, provided that they are included in the contract notice, the notice used as a call for competition or in the tender documents. These specific conditions of performance of the contract may include environmental aspects.
- **Evaluation criteria** (§44 of the PPA): Buyers can assess value for money on the basis of price and other criteria which can include environmental aspects. Criteria must be related to the subject of the contract.

Along with defining and allowing for the use of GPP, the PPA requires its use by certain public buyers. The Act distinguishes three categories of public entities with different obligations with respect to strategic procurement, including GPP:

1. **Contracting authorities**, including ministries, government offices under the ministries, municipalities, regional governments, legal entities that are controlled and financed by other contracting authorities or whose board is selected by another contracting authority (such as universities, hospitals, etc.), and an association of entities made up exclusively of contracting authorities.
2. **Contracting entities**, including entities partially owned or controlled by a contracting authority. This includes entities active in the energy, water, transport and postal services sectors.
3. **Entities subject to section 8 of the PPA**, which includes all private bodies which receive public funding from contracting authorities.

Contracting authorities pursuant Section 7 (1) b – e (municipalities, higher territorial units, etc.) and contracting entities are required to use social or environmental aspects within the description of the subject of the contract as a special performance condition or within evaluation criteria in at least 6% of these public procurements in the calendar year in which at least ten public contracts were started or implemented, excluding low value contracts. The contracting authorities pursuant Section 7 (1) (a – state entities) are obliged to use within the description of the subject of the contract as a special performance condition or within evaluation criteria the environmental aspect in at least 6% and the social aspect in at least 6% of these public procurements in the calendar year in which at least ten public contracts were started or implemented, excluding low value contracts.

The Public Procurement Office of Slovakia has put in place policies to encourage GPP

The key challenges for GPP are often in encouraging implementation by public buyers. A focused effort on providing tools and information to public procurement officials can have a significant impact on the success of GPP. Dedicated webpages, stakeholder dialogue, public events and conferences can be successful communication efforts to promote GPP (OECD, 2015^[3]).

Despite the enabling legal and regulatory framework, the use of GPP to achieve environmental objectives remains relatively limited in Slovakia. Responding to these challenges, the PPO prepared a set of guidelines, including examples of EU GPP criteria implementation, for the implementation of social, green and innovative public procurement in 2017 and a strategy on social procurement in 2021 (OECD, 2021^[27]). The Slovak Environmental Agency also operates a GPP HelpDesk to provide information on GPP for public buyers (OECD, 2022^[14]) and seminars for public authorities focused on practical GPP are organised regularly. Notably, the Ministry of the Environment prepared a commentary focusing on the advantages of electric vehicles in terms of long-term operating costs, including a calculator to compare the costs of conventional and electric vehicles (European Commission, 2022^[28]).

The monitoring and evaluation of GPP is important to ensuring the benefits are fully realised

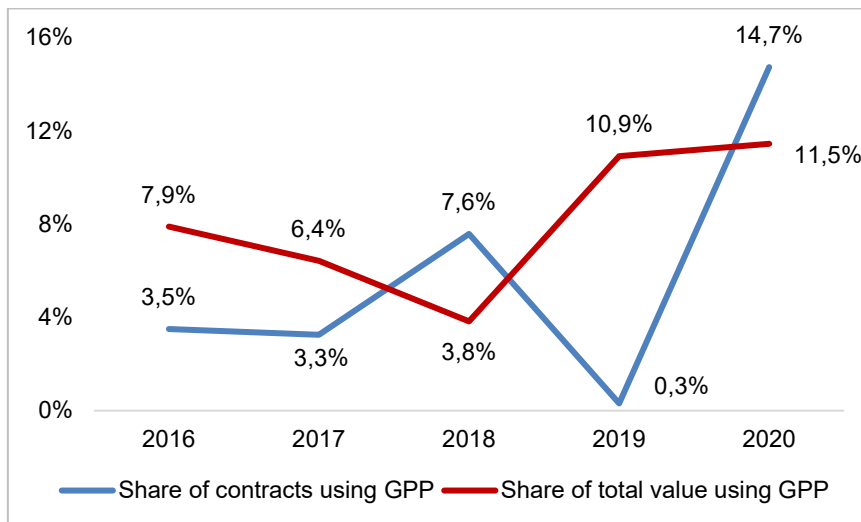
The absence of monitoring mechanisms to evaluate if GPP is achieving its goals can be an obstacle to successful implementation (OECD, 2015^[3]). In Slovakia, the Slovak Environment Agency tracks the use of GPP to monitor the implementation National Action Plan for Green Public Procurement in the Slovak Republic for 2016 – 2020. Monitoring was carried out in the form of an online survey of public institutions using two indicators:

- Percentage share of GPP in relation to the total number of public procurement contracts;

- Percentage share of GPP in relation to the total value of public procurement contracts in euros (excluding VAT).

Both indicators increased significantly from 2016 to 2020 but did not reach the 50% target (see Figure 1.4). The response rate for the survey ranged from 36% of surveyed institutions in 2016 to 19% in 2020 (institutions committed to using GPP may also be expected to be more likely to respond to a survey on GPP).

Figure 1.4. Use of GPP in Slovakia by Public Institutions



Note: Public institutions include central government bodies and their subordinate organizations, higher territorial units and public institutions established by them, cities and city districts
Source: Public Procurement Office of Slovakia

2 Green public procurement case studies in the pre-tender phase

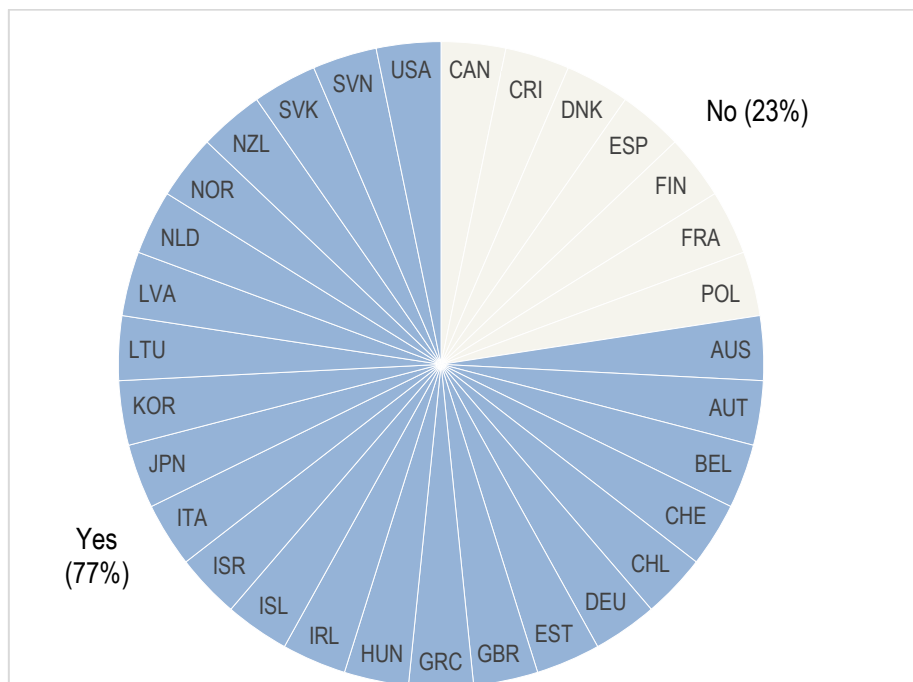
The pre-tender phase is critical to a successful procurement, particularly for GPP. In the traditional approach to public procurement, efforts are focused on the tendering phase, while strategic procurement puts more emphasis on the pre-tendering phase (needs assessment, market engagement and the development of technical specifications) and contract management (OECD, 2021^[27]). Experience suggests that strategic public procurement is only successful when end users, subject-matter experts, managers and suppliers are involved in the design implementation of tenders. To ensure this collaborative approach, additional attention and efforts should be devoted to the pre-tendering phase where these interactions should occur (OECD, 2021^[29]).

The pre-tender phase allows for the identification of GPP opportunities and the development of a GPP strategy as well as providing an opportunity to engage with stakeholders and ensure the GPP process is transparent and accountable. Consulting with stakeholders and suppliers is crucial to assess available solutions and gauge suppliers' capacity to respond. GPP tries to shift the market towards sustainability by increasing the demand for green products; however, the ability to support long-term uptake of green solutions can be disrupted by factors such as a lack of information on green products, limited interest from buyers and the absence of incentives for suppliers (OECD, 2015^[3]).

The pre-tender phase also requires contracting authorities to develop or apply criteria for selecting suppliers and solutions that minimise environmental impact. In the OECD's *2022 Survey on Green Public Procurement*, three quarters of respondents, including Slovakia, indicated that contracting authorities were able to refer to GPP criteria defined at the central level (see Figure 2.1). Credible standards determining what products or services count as green (e.g. eco-labels) are core tools for reducing environmental impact. Using standards can ease the decision-making process in public procurement and contribute to a harmonised approach to GPP (OECD, 2015^[3]).

Adequate planning and preparation in the early stages of the procurement process can determine the success of the tendering process and help to ensure successful delivery in the contract management stage. During the planning stage, public buyers determine the criteria to monitor, and establish related contract clauses. Contract clauses are important to establish that monitoring will take place and to ensure a clear understanding between parties to the contract on responsibilities and reporting expectations (OECD, 2022^[29]).

Figure 2.1. GPP criteria defined at the central level that contracting authorities can refer to for the drafting of public tenders



Source: (OECD, Forthcoming^[7])

Case studies in needs assessment and planning

London 2012 Olympics: Improving the sustainability of concrete 🏢

As part of the wider sustainability objectives of the London Olympic Games, public procurement strategies were implemented to minimise the environmental impact of new facilities. This included implementing innovative ways of using concrete to construct the Olympic Park to save significant resources and related GHG emissions.

Background: buyer, good or service, and objective

In its bid for the 2012 Olympics, the British government pledged to host the “greenest Games of modern times” (Department for Environment & Rural Affairs, 2013^[30]). Sustainability was thus a key consideration in the procurement of the construction of stadiums and facilities. The construction of the Olympic Park, which included the Olympic stadium, the Olympic aquatics centre and the athletes’ village, was a key project. The London 2012 Olympic Delivery Authority (ODA), the public body responsible for ensuring the delivery of venues and infrastructure for the Games, oversaw this project. Initial estimates indicated a requirement for 500,000 m³ of ready mixed concrete and an equivalent aggregate requirement of 1 million tonnes for the Olympic Park. This posed a challenge to the ODA’s sustainability objectives given the potentially high environmental impact that would result from producing such a large quantity of concrete (Henson, 2011^[31]).

Accordingly, the ODA focused on improving the sustainability of the concrete used in construction. Centralised procurement, early supply chain integration and extensive trials and testing of sustainable concrete mixes were key to reducing the overall environmental impact. Concrete production was organised centrally, enabling new and innovative solutions like low carbon concrete, which would not have been cost-

effective if procurement had not been on a site-wide basis. Moreover, a focus on masterplan efficiency allowed for a saving of some 100,000 cubic meters of concrete (Department for Environment & Rural Affairs, 2013^[29]).

Process

The ODA provided suppliers with a brief outlining the sustainability opportunities and challenges and invited them to give a presentation to the ODA and project teams on how they would meet the challenges. The ODA also led workshops at different project stages, including an initial meeting with project teams and the concrete supplier prior to the specification of ready-mix concrete and contract award. Sustainability was listed as one of the ODA's procurement values in its Supplier Guide, which provided information to suppliers and contractors interested in opportunities on the Olympic Park. An Olympic Liaison Group was also established by the Construction Products Association, an organisation representing industry manufacturers and suppliers, to provide regular updates about Olympic projects. Three meetings were held a year with the aim of informing industry of current progress on the Olympic Park, the ODA's priorities and processes, and contract opportunities. This enabled potential suppliers to prepare accordingly.

Concerns that sustainability requirements would disadvantage and deter SMEs from bidding were mitigated by using the CompeteFor system. The CompeteFor online portal required bidders to demonstrate that they were 'Business Ready', by producing a range of corporate policies such as sustainability, and equality and inclusion, before they could access the system and become eligible for selection. Where businesses were not ready, they were referred to local business support agencies that helped them develop the required policies. This testing and support process conditioned SMEs to the ODA's wider objectives (Department for Environment & Rural Affairs, 2013^[29]).

By engaging with suppliers, the ODA was better informed about potential innovative solutions, and suppliers were better able to innovate as they were better informed about the ODA's requirements. Early engagement with the supply chain allowed sustainability issues to be discussed prior to any concrete being poured on the project site. Once the procurement process had advanced, the ODA worked with the concrete supplier and engaged with the supply chain to develop sustainable concrete mixes (Henson, 2011^[30]).

Challenges in implementation

There were a number of challenges encountered during implementation. Having already procured a more environmentally sustainable concrete mix thanks to the process outlined above, the ODA was met with some resistance from contractors in the construction phase. For example, contractors were concerned that environmentally friendly supplements in the concrete mixture would lead to longer strike times and a lower quality finish, despite there being no evidence to support this. Due to conservatism from within the UK construction industry and the high profile nature of the Olympics, the concrete used for the superstructures in all of the buildings in the Park did not include the more environmentally friendly mixture. Nonetheless, thanks to the commitment of the tier one contractor for the aquatics centre, doubts were publicly refuted about the use of the new mixture and it was used in 76% of the concrete in this building. The result was of high quality and became a showcase example for other projects (Henson, 2011^[30]).

This example shows how decisions made at the pre-tendering and tendering stages can encounter pushback at the implementation stage. Despite the fact that many contractors initially refused to use the new environmentally friendly concrete mixture, assertion and reassurance on behalf of tier one contractors and supplies was able to overcome scepticism. It also highlights the importance of discussion over the whole supply chain (Henson, 2011^[30]).

Results and lessons

Despite the challenges, the sustainability objectives of the ODA were widely considered to have been met. The concrete supplier was awarded the framework agreement in December 2007, in part because it was commercially competitive and in part because it stood out in terms of its understanding and commitment to sustainability (Department for Environment & Rural Affairs, 2013^[30]). A large amount of resources were saved thanks to efficiency measures. Initial estimates for the amount of concrete needed were 500,000 cubic meters; however, the actual volume poured was approximately 400,000 cubic meters. This represents a total saving of 20,000 tonnes of CO₂ emissions and 120,000 tonnes of primary aggregate use. Furthermore, the choice of an energy efficient cement supplier saved an estimated 2,500 tonnes of GHG emissions when compared to the UK average (Henson, 2011^[31]).

A number of other green procurement choices were made; for example, the use of sustainable transport and implementation of an externally accredited sourcing scheme across most of the supply chain. Overall, thanks to the innovation and efficiency of public procurement decisions, contractors, planners and engineers, an estimated 289,000 tonnes of primary material was saved (Henson, 2011^[31]).

A number of lessons were learnt from the project. Firstly, the need for strong sustainability ambitions of the buyer and the communication of this to the design and supply team. Secondly, the importance of innovation and willingness of contractors to adapt outdated practices to meet environmental objectives. Thirdly, the key role that efficiency in all stages of construction plays and finally, the importance of good planning and forecasting of material use (Henson, 2011^[31]).

Supporting the green procurement of textiles in the Nordic healthcare sector

The healthcare sector uses large amounts of textiles: staff uniforms, bed linen, patient clothing and operation room gowns. This project provided healthcare procurers with the resources or knowledge to successfully apply green criteria (Miljøstyrelsen, 2018^[17]).

Background: buyer, good or service, and objective

Using green criteria in procurement contracts can increase the demand for greener textiles and textile services, stimulating green innovation in the supply chain. The project focused on reducing the environmental impacts of both the choice of textiles being purchased or leased and how they are laundered, as well as the links between the two.

Guidance documents can assist and inspire procurers to apply green public procurement to realise these benefits. The target group included healthcare procurers in regions, municipalities and individual hospitals as well as suppliers of healthcare textiles and other healthcare products. Hygiene and user comfort considerations are strong priorities for procurers in the health sector, and it is critical to respect these two issues while seeking to reduce environmental impacts (Watson and Fisher-Bogason, 2017^[15]).

Healthcare procurers are also organised differently in the countries across the region. In Denmark, the regions set up framework agreements that individual hospitals draw down from. In Norway, a central procurement organisation establishes framework agreements which individual hospital trusts can decide to make use of or not. In Sweden, regions sometimes collaborate to establish framework agreements, but individual hospitals also make smaller orders. In general, framework agreements reduce the procurement resources needed to develop tenders and can help deliver lower prices due to volume (Watson and Fisher-Bogason, 2017^[15]).

Process

The project was undertaken as part of the Nordic Action Plan for Sustainable Fashion and Textiles, which identified GPP as an important leverage point: first, the public sector is a significant consumer of textiles

and, second, public procurers using GPP can establish markets and processes which can have positive effects on private procurers (Watson and Fisher-Bogason, 2017^[15]). The project was carried out by PlanMiljø (Denmark) in partnership with the TEM foundation at Lund University (Sweden) which runs the Nordic Centre for Sustainable Healthcare (NCSH) (Miljøstyrelsen, 2018^[17]).

To understand how textiles are procured by the target group of procurers, an online questionnaire survey was carried out and fact sheets produced for each country summarising the findings. A network of procurers was established and invited to two network meetings. The first meeting further investigated the needs of procurers and examined what GPP meant in healthcare textiles. A draft guide for procurers was developed based on inputs from the network and desk research. The draft guide was presented to the network at the second meeting. Suppliers were also invited to the second meeting. The project ended with a seminar where the final guide was presented and opportunities for continuing the activities of the network were discussed (Miljøstyrelsen, 2018^[17]).

The guide includes an overview of the aspects of the production and use of textiles that have the greatest environmental impact, sections on the procurement process and the use of market dialogue and innovation, an overview of ecolabels, of fibres, single use and reusable textiles and applying a life cycle costing approach. It includes relevant aspects to be discussed as part of market dialogue, examples of minimum and award criteria, an overview of ecolabels, information about the choice of fibre, and the use of LCC. The guide is also tailored to the specific context of hospitals: for example, it includes considerations for operation room textiles where infection control is of paramount importance (Watson and Fisher-Bogason, 2017^[15]).

Results and lessons

A Nordic Guide on Green Procurement of Healthcare Textiles in Healthcare providing healthcare procurers with information, resources and practical examples was produced in English, Norwegian, Danish, Swedish and Finnish¹. It was well received by public buyers and procurement advisory bodies such as the Swedish National Agency for Public Procurement (Miljøstyrelsen, 2018^[17]).

While the Guide was well received, there were challenges maintaining momentum in the use of GPP. It was hoped that the network established in the development of the Guide would continue, focusing on GPP for other products and services. However, there were difficulties in shifting the network towards new topics and securing financing to continue the network for interested parties (Miljøstyrelsen, 2018^[17]).

Case studies in defining specifications and setting requirements

Defining environmental technical specifications and award criteria for the procurement of computers, printers, and related services

The Region of Tuscany worked with the Agency for Environmental Protection of Tuscany to develop and apply environmentally sensitive technical specifications and award criteria to the procurement computers, printers and associated services.

Background: buyer, good or service, and objective

In July 2020, the Region of Tuscany launched a public tender for the supply of computers, printers and associated services for the integrated management of workstations of public offices. The objective of the procurement was to ensure the supply of high-quality information technology tools and guarantee environmental sustainability. For this reason, the Region of Tuscany sought the support of the Regional

¹The Guide can be found here: <http://dx.doi.org/10.6027/ANP2017-717>

Agency for Environmental Protection of Tuscany (ARPAT) to define, adapt and integrate green criteria in the tender documents (European Commission, 2022^[31]).

The procurement was divided into three lots with a total estimated value of €32 million (see Table 2.1).

Table 2.1. Division of the procurement into three lots

Lot	Goods or services	Estimated value (net of VAT)
Lot 1	Personal computers, printers and other devices for the public offices of the regional administration and other regional agencies and bodies	€16 million
Lot 2	Personal computers, printers and other devices for the public offices of the regional and local health authorities	€12 million
Lot 3	Supply of professional technical software and related maintenance services	€4 million

Source: (Regione Toscana, 2020^[32])

Process

ARPAT conducted a preliminary study to assess the environmental criteria that could be applied to the tender. In 2020, Italy had defined mandatory Minimum Environmental Criteria (MECs) for the procurement of printers, but there were not yet MECs for computers (European Commission, 2022^[31]). For computers and monitors, ARPAT and the Region of Tuscany adapted the draft EU GPP criteria for computers, monitors and smartphones (draft of November 2019 and June 2020 developed by the Joint Research Centre in Seville), in some cases applying even more stringent green criteria. For the technical specifications, these included:

- minimum energy performance requirements.
- lifespan extension by means, for example, of an extended service agreement (i.e., access to the manufacturer's warranty, pick-up and return, battery coverage and replacement policy, etc.), functionality for secure data deletion, rechargeable battery endurance for mobile equipment, and backward compatibility of adapters.
- end-of-life management with the mandatory marking of plastic casings, enclosures and bezels.

For printers, the 2019 MEC was applied. Requirements included minimum energy performance levels, compatibility with the use of 100% recycled paper, duplex imaging capability, print preview mode, multi-page printing, limitations to noise emissions and limited use of hazardous substances and heavy metals in toners and inks. For personal printers and those for small groups of employees, MEC limited the emission of pollutants, and required the capability to use remanufactured toner and inkjet cartridges as well as eco-design solutions to facilitate disassembly, recycling of materials and reparability (European Commission, 2022^[31]).

Moreover, the green criteria used in the tender were also accompanied by an indication of the tools and documents necessary to verify compliance. This helped both bidders and the contracting authorities, as it provided practical guidance on how to satisfy environmental standards as well as how to verify whether bidders fulfilled the green requirements (European Commission, 2022^[31]).

Lots 1 and 2 were awarded based on the best price-quality ratio with the technical offers worth 70 points and price worth 30 points. The technical offers included two green criteria. The first criterion awarded a maximum of 1 point if the energy performance of computers and monitors were higher than the minimum level defined in the technical specifications and the second criterion awarded an additional 1 point if the battery endurance was greater than 500 cycles (with 80% or more capacity retention of the initial rate capacity) (European Commission, 2022^[31]). Lot 3 was awarded on the basis of price (Regione Toscana, 2020^[32]).

Lessons learned

First, the close collaboration between the contracting authority (i.e., the Region of Tuscany) and ARPAT shows the importance of leveraging multidisciplinary skills to make public tenders both green and effective. Most notably, the coordination with ARPAT helped combine social, environmental, and technological expertise with procurement skills.

Second, preliminary market analysis (either by means of desk research or market dialogue) is important to assess potential suppliers' capacity and willingness to comply with GPP requirements. Based on their response, the tender can be adjusted accordingly to make sure it is sufficiently attractive for suppliers to ensure an adequate level of competition. In the Region of Tuscany's public tender, the preliminary market analysis revealed that the market was not ready to fully meet the green requirements of the draft EU GPP criteria for computers, monitors and smartphones. The solution was then to adapt such criteria and exclude some criteria from tender documents. Sustainability objectives were not compromised, and the public tender attracted enough bidders: three bids were received for Lot 1, and four for Lot 2.

Third, even when there are no pre-defined green criteria for procurement at the national level, contracting agencies can rely on other sources to develop them. These include EU sources, such as EU GPP criteria for the different product/service categories and Joint Research Center (JRC) draft documents, as well as existing good practices from other public procurers or projects across the globe. For example, ARPAT took inspiration from the procurement practices of Region Stockholm and from the criteria developed by the EU project Make ICT Fair to define social responsibility criteria within the 2020 public tender (European Commission, 2022^[31]).

Environmental impacts

The GPP criteria adopted in this public tender ensured an extended lifetime of the new equipment for the Region of Tuscany. The manufacturing and use phase of computers have significant lifecycle environmental impacts, with production being the greatest contributor to GHG emissions. Moreover, the production of printed circuit boards and integrated circuits also cause adverse effects. For this reason, the adoption of green requirements aimed at extending the lifetime of IT equipment is key to limiting their environmental impact. In addition to that, the application of the MECs for printers contributed to the sustainable production and consumption objectives of Italy, and improved natural resources management and limited pollution (European Commission, 2022^[31]).

Heat recycling to reduce CO₂ emissions in Denmark

The municipality of Hedensted used functional performance-based criteria for its heating system, allowing the market to find an innovative solution to save money and reduce CO₂ emissions and resource consumption. The municipality moved to a new technology which collects excess heat from computer servers and re-uses it for heating and hot water through the existing systems of a building (OECD, 2015^[33]).

Background: buyer, good or service, and objective

The Danish municipality of Hedensted was releasing heat generated by cooling the city hall servers and was aware that this emission of excess heat was a wasted resource. It sought to invest in innovative solutions that would reduce its CO₂ footprint and create financial savings (OECD, 2015^[4]).

Process

Procurement of a function rather than a product facilitates more innovative solutions than with traditional tenders. Typically, tender documents described traditional cooling systems, under which innovative approaches using recycled excess heat would not be eligible. By basing procurement specifications on the function, performance and results rather than specific product details, suppliers had the possibility to contribute new and innovative solutions (Miljøstyrelsen, 2013^[33]). Hedensted used functional performance-based criteria instead of describing traditional cooling systems in the tender documents. This made it possible for the market to find an innovative solution to save money and reduce CO₂ emissions and resource consumption (OECD, 2015^[3]).

Results and lessons

The municipality moved to a new solution using a technology which re-uses the heat generated by its computer servers. The heating system collects the excess heat from servers and re-uses it for heating and hot water through the existing heating system of a building (OECD, 2015^[3]).

Roughly 700 kWh is generated from Hedensted's servers every day. This corresponds to the daily electricity consumption of 24 households and meets between 50% and 75% of the city hall's heating needs. Overall, Hedensted saves approximately 28 tonnes of CO₂ annually. The system also reduces heating costs by recycling excess heat and less CO₂ is emitted as other sources of heat and refrigeration are limited. Moreover, the solution is based on natural refrigerants that do not pollute the environment. Hedensted calculated that it saves approximately DKK 73,000 (approximately €10,000) annually in cooling and heating expenses. With a purchasing and implementation cost of DKK 400,000 (approximately €53,600), the system has a payback period of approximately 5.5 years. As of 2019, 10 municipalities, including public swimming pools and several education institutes, had purchased similar technology (Miljøstyrelsen, 2013^[33]).

Public procurers need to have a life-cycle cost perspective in procurement in order to understand the full advantages of the solutions where the initial investments may be higher but costs are lower overtime in terms of energy savings and environmental advantages (Innovation for Sustainable Development Network, 2019^[34]).

Procuring sustainable uniforms for the French Navy 

The French Ministry of Defence carried out a pilot procurement using criteria targeting environmental impacts along the clothing production line. The results of the pilot procurement indicated that it is possible to include comprehensive environmental requirements in this type of tender.

Background: buyer, good or service, and objective

The French Ministry of Defence procures clothing for 240,000 people with an annual expenditure of over €150 million. As a major buyer in the sector, the Ministry saw the opportunity to promote its sustainable development objectives by introducing procurement criteria targeting environmental impacts along the clothing production line (European Commission, 2012^[35]).

The main environmental impacts addressed in the tender were the use of toxic and hazardous substances in the production process. The production of non-organic cotton is an intensive agricultural process, with the use of pesticides and mineral fertilisers affecting soil and water quality and biodiversity, as well as GHG emissions. The use of certain substances involved in the processing of fibres and final textile products (such as dyes and flame retardants) can also degrade air, soil and water quality and have a negative impact on the health of users where they remain as residues in the textiles (European Commission, n.d.^[36]).

Process

The framework was divided into two lots for the supply of between 36,000 and 150,000 cotton knit jerseys over a period of three years. The first lot was for clothing produced with standard cotton and the second lot was for clothing produced with organic cotton.

Table 2.2. Division of procurement into two lots

Lot 1	Lot 2
<ul style="list-style-type: none"> • Supply of industry standard blue cotton jerseys (conventional cotton) • Toxicity: hazardous substances must not be used in the production process or present in the final product in amounts above the below thresholds: <ul style="list-style-type: none"> ○ Aromatic amines in azo dyes < 30 ppm ○ Azo dyes < 75 ppm ○ Cadmium (in polymer coating) < 75 ppm ○ Formaldehyde (cas : 50-00-0) < 75 ppm ○ pH range: 4.5 < pH < 7.5 	<ul style="list-style-type: none"> • Supply of organic blue cotton jerseys (cotton must be produced by an organic method of agriculture which conforms with European regulations on organic production and labelling of organic products) • Toxicity: hazardous substances must not be used in the production process or present in the final product in amounts above the below thresholds: <ul style="list-style-type: none"> ○ Aromatic amines in azo dyes < 30 ppm ○ Azo dyes < 75 ppm ○ Cadmium (in polymer coating) < 75 ppm ○ Formaldehyde (cas : 50-00-0) < 75 ppm ○ pH range: 4.5 < pH < 7.5

Source: (European Commission, n.d.^[36])

Labels were used to show that the requirements were satisfied. The Oeko-Tex label was accepted as evidence of conformity with the requirements regarding hazardous substances and the EU Ecolabel was accepted as evidence of organic production for Lot 2. In both cases, other equivalent forms of evidence were also accepted (e.g. test results from an accredited laboratory in the case of hazardous substances). To verify compliance with the contract performance clauses, the Ministry relies upon the services of a firm specialising in social auditing (European Commission, n.d.^[36]).

Technical quality was weighted at 45%, price at 35%, and sustainability factors at 20%. The sustainability criteria of sustainable were divided into two sub-criteria, relating to the control of substances used in production and environmental management along the entire supply chain. In previous tender procedures, a weighting of 60% was to technical quality and 40% to price. Due to the homogeneity in the quality of offers received, this meant that in practice price was the deciding factor. The introduction of 20% of the marks for sustainability considerations thus changed the basis for competition amongst suppliers (European Commission, n.d.^[36]).

Results and lessons

The price of Lot 1 (conventional cotton) was 2% lower than previous tenders while the cost for Lot 2 (organic cotton) was 22% higher than the conventional cotton. 28 suppliers requested the tender documents and two bids were received for each of the two lots. A survey of the suppliers who requested the documents but did not submit a tender was carried out, which found that the relatively low price of cotton was in some cases not considered to merit investment in a sustainable supply chain. However, it is hoped that the continued practice of giving sustainable development a high weighting in tender evaluation will encourage suppliers to make this investment (European Commission, 2012^[35]).

A number of lessons learned will be taken forward in future procurements. Expectations regarding the reduction of waste in the finishing process will be clarified, maximum thresholds for toxicity will be specified, with the relevant period and unit of measurement, evidence of the treatment process for hazardous waste will be requested, and the traceability of raw materials through the production process will be improved (European Commission, 2012^[35]).

Case studies in the choice of procurement procedure

Leveraging innovation for the renovation of a sustainable youth centre in Spain

A consortium of local governments in Valencia, Spain sought to use an innovation procurement to sustainably refurbish an unused warehouse and transform it into a youth centre.

Background: buyer, good or service, and objective

The Ribera Consortium is a public body which brings together 47 municipalities and two counties, including the city of Alzira. Although most public procurement within the region is led by the relevant municipal authorities, the Consortium leverages its expertise and access to funding to support procurements with an environmental or innovative focus (European Commission, 2019^[38]). For this procurement, the Ribera Consortium was responsible for the contract and for communication between the successful bidder and Alzira (Consorti de la Ribera, 2018^[38]).

Alzira, a city of approximately 45,000, sought to rehabilitate and develop the Magatzem de Cucó (Cucó warehouse) into a youth centre. The city is a signatory of the EU Covenant of Mayors for Climate and Energy, which brings together thousands of local governments which voluntarily commit to implementing EU climate and energy objectives (European Commission, n.d.^[37]).

The objective of the tender was to procure the supply and installation of innovative exterior solutions for the facades of the Magatzem de Cucó to reduce energy consumption and associated CO₂ emissions, while providing the necessary degree of soundproofing according to the future use of the building as a youth centre (Consorti de la Ribera, 2018^[37]). Suppliers were asked to provide innovative façade renovations (principally windows, including glazing, frames, and shading) in accordance with the Alzira's overall sustainability goals (European Commission, 2019^[38]).

Process

Before the launch of the tender, a market consultation day was organised in collaboration with the local university and city of Alzira to facilitate open dialogue and information sharing between the administration and potential suppliers.

The tender produced was a result of those consultations and used an open procurement procedure. After a needs assessment, the priorities for tender criteria were:

- A holistic evaluation of how the solution responded to the project requirements in an innovative way.
- The use of tools to test energy efficiency (e.g. of lighting, heating gains and losses).
- The life cycle cost (LCC) of the renovation.

The available budget was communicated in advance (estimated tender value of €200,000) to show potential suppliers what was appropriate for innovative solutions. The consortium also encouraged innovative offers by preparing a detailed questionnaire for suppliers interested in the market engagement events, providing them with an opportunity to show how their solution could meet Alzira's needs better than traditional solutions. Following the launch of the tender, an information session and site visit were held to explain the criteria (European Commission, 2019^[37]; Consorci de la Ribera, 2018^[38]).

The Consortium provided LCC costing calculation tools as well as the building model for energy simulations. A simulated energy performance analysis of the building with standard solutions (meeting the minimum performance by current building regulations) was provided as a baseline, and bidders asked to demonstrate the reduction in energy demand that their bid would achieve by inputting their solution into the energy efficiency model, with a minimum requirement of a 5% improvement. Using these tools, each bidder was required to demonstrate the improved energy performance of their proposed solution over a common baseline. Energy efficiency modelling considered the heating and cooling demand and the LCC costing analysis included the cost of materials and installation, energy costs, maintenance costs and end-of-life costs (sorting and recycling of materials) (European Commission, 2019^[37]).

Results and lessons

Three bidders submitted tenders, two of which were compliant all criteria and proceeded to evaluation. Compared to the baseline model, the successful solution reduced energy demand for heating by 15% and energy demand for cooling by 19%. Overall, the renovation reduced the building's energy demand by 15%. Key lessons learned included the importance of early communication with suppliers on the objectives of the tender and all relevant information about the building, both by publishing details on tender platforms through a prior information notice and inviting potential bidders to dialogue with the public authority and visit the site (European Commission, 2019^[37]).

As the first tender of its kind in the region, the innovation component was challenging for the market. Despite the Consortium's engagement efforts, neither of the compliant bids scored well on this measure. However, the procurement provided a model for the region and contributed to building market capacity. The Valencian Innovation Agency published a practical guide to promote innovation procurement in the region, which included important contributions from the Alzira case, a replication of the procurement model was undertaken by another small municipality in the same region (European Commission, 2019^[37]).

3 Green public procurement case studies in the tender phase

The tender phase is critical in GPP because it allows contracting authorities to evaluate the environmental performance of potential solutions and suppliers. Through the evaluation of the environmental credentials of suppliers, such as their environmental management system, their environmental policies and their track record of environmental performance, contracting authorities can identify environmentally responsible suppliers and ensure that environmental outcomes are achieved.

By allowing bidders to submit their best offers and allowing the public sector to compare these offers and select the most sustainable solution, the tendering phase is the opportunity for public buyers to obtain the most sustainable and environmentally friendly solutions while achieving the best value for money. Depending on the procurement procedure selected, the tender phase can also help to promote innovation in GPP by providing opportunities for bidders to submit innovative solutions.

Case studies in the invitation to tender

Innovation procurement for healthcare catering in the UK 🍏

The Rotherham NHS Foundation Trust, a hospital in the United Kingdom, used an innovative approach to procure environmentally sustainable and low-carbon catering services.

Background: buyer, good or service, and objective

The Rotherham NHS Foundation Trust, a 500-bed hospital within the UK's National Health Service, developed a pro-innovation procurement strategy for catering services, including the use of extensive market engagement and a competitive dialogue process. The procurement sought people-centred, environmentally sustainable and low carbon catering services, with the requirement that they demonstrate cost competitiveness through lifecycle cost savings (European Commission, 2015^[40]).

The Rotherham NHS Foundation Trust is a signatory of the Procurement Compacts for new 'low to zero carbon' goods and services, which brings together major public and private sector buyers to demonstrate to potential suppliers that there is a market demand for cost-effective, low-carbon solutions in areas such as catering. To increase the supply of affordable low-carbon goods and services, it provides suppliers with a visible, credible incentive to invest in developing the low-carbon products of the future. The signatories invite potential suppliers to work with buyers to in a constructive dialogue to bring progressively lower-carbon goods and services into the market (UK Corporate Leaders Group on Climate Change, 2012^[41]).

In delivering this procurement, the Trust sought to adopt innovation procurement good practice, including market engagement and collaboration with suppliers, use of outcome based requirements and specifications, lifecycle costing and best value evaluation to enable suppliers to distinguish their offering on factors other than price, and a focus on progressive improvements over the life of the project (Rotherham NHS Foundation Trust, 2012^[42]).

Process

The requirements for catering provision were developed by a cross-disciplinary team drawn from across the organisation and in consultation with staff and client stakeholders, government departments, and peers from healthcare organisations in the UK and other European countries.

The Trust published a Prior Information Notice (PIN) to provide the market with advance notice of the tender on several public procurement websites in the UK and on Tenders Electronic Daily. The PIN informed the market that a procurement exercise could begin in the future and highlighted the innovative requirements (European Commission, 2015^[40]).

The PIN also launched a market sounding and consultation period in advance of the formal tender process. The purpose of this market engagement was to seek feedback on the options that were or could be available given the right market conditions that would enable the Trust to meet its requirements and deliver progressive improvements over the life of the contract. The market engagement asked for the views of suppliers on the feasibility of the requirements and the capability and capacity of the market to offer a solution that met those requirements. The engagement was wide-ranging, seeking information and innovation from all parts of the supply chain that could contribute to improvements in the requirements, contribute to a new total solution, provide a total solution, and/or involve incremental improvements or a step change in the short, medium and long term. As part of the market engagement, the Trust held a workshop with potential suppliers to help them find out more about the Trust's requirements and contribute to the finalisation of the specification and the procurement strategy (Rotherham NHS Foundation Trust, 2012^[42]).

Results and lessons

Thirty-five organisations participated in the market sounding exercise and five suppliers advanced to the competitive dialogue phase. As part of the dialogue phase, suppliers were required to present their carbon reduction and innovation plans. The incumbent supplier ultimately won the contract after coming up with innovative ways to reduce waste and offering to qualify for a well-recognised environmental accreditation. A contract was awarded with a forward commitment of up to ten years (five years with a possible extension of five more years). Financial savings totalled just over one million euro in the first five years (European Commission, 2015^[40]).

Lessons learned included the commitment and time required: the procurement took a total of two years. Preparation, especially at the dialogue stage, and maintaining accurate records of all meetings with the prospective tenderers helps eliminate uncertainty through the process. Finally, engagement from stakeholders, in this case staff and patients, is important from the outset (Cartwright, 2016^[43]).

Case studies in evaluation and award

Using life-cycle assessment criteria for the procurement of low-carbon residential buildings in Helsinki

In 2019, the City of Helsinki sought to procure the design and construction of four blocks of high-quality and low-carbon wood construction flats. Minimum requirements and environmental evaluation criteria were adopted to reduce the environmental and climate impact of the project. Most notably, the carbon footprint of the buildings over their full life cycle was considered as part of the procurement scoring.

Background: buyer, good or service, and objective

With the aim of achieving carbon neutrality by 2035, the City of Helsinki's Carbon Neutral Action Plan targets the highest GHG emitting activities: heating buildings, electricity consumption, and traffic (European Commission, 2021^[44]). Through sustainable procurement, the Action seeks to reduce energy and materials consumption and negative environmental impacts during the entire lifecycle of the products, services or buildings being procured, while specifically noting that wood construction produces significantly fewer GHG emissions than concrete construction. As a high-volume procurer (procurements form more than 40% of the City's expenses), Helsinki's Action Plan acknowledges that it can influence the development of markets in a low-emission direction and create incentives for the creation and adoption of cleantech solutions (City of Helsinki, 2018^[45]).

The Helsinki Housing Production Department is responsible for the City's housing production. In 2019 it launched a public tender for the design and construction (i.e., "design and build") of four high-quality and low-carbon blocks of wood-construction flats. The apartment buildings are in the new Kuninkaantammi residential area, where design solutions already incorporate to climate change mitigation and adaptation, as well as other environmental considerations (e.g., biodiversity, circular economy, energy efficiency, renewable energy production). The objective of the procurement was to reduce the project's climate and environmental impacts by increasing energy efficiency and use of renewables as well as minimising the emissions related to construction and materials production (European Commission, 2021^[44]). The procurement value was estimated at approximately €23 million (City of Helsinki, n.d.^[46]).

Process

The preparation of the procurement involved a range of experts, including an HVAC (heating, ventilation, and air conditioning) planning manager, a developer architect, and a project manager from the Housing Production Department. They were further supported by experts from the EU-funded Towards Carbon Neutral Municipalities and Regions (CANEMURE) project initiative and by climate specialists from Helsinki's Environmental Services. Experts from the Finnish Environment Institute and the private sector were also consulted regarding the low-carbon objectives of the project. The tender documents were prepared in between May and June 2019, and the call for tenders was launched in August and remained open until December of the same year. The preliminary agreement with the supplier was signed in September 2020 (European Commission, 2021^[44]).

To limit the emissions impact of the project, various minimum environmental requirements were introduced, including the requirement to use wooden structures and materials (indoors and outdoors), the use of renewable energy sources and power systems, and the requirement for a fossil-free worksite. Furthermore, the zoning regulation already required the buildings to have a primarily wooden structure and to apply the principles of low-energy construction (European Commission, 2021^[44]).

Bids were evaluated based on a scoring system that considered qualitative criteria and price (see Table 3.1).

Table 3.1. Award criteria for the procurement

Qualitative criteria (50 points)		Price (50 points)	
Architectural and technical quality (30 points)	Environmental criteria (20 points)		
	Lifecycle carbon	Energy efficiency	

	footprint (14 points)	exceeding the minimum requirement (6 points)	
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Source: (City of Helsinki, n.d.^[46])

For the lifecycle carbon footprint, tenderers were given access to a life cycle analysis tool for the duration of the tendering process, along with instructions, a user manual and training sessions. The carbon footprint will be calculated twice: in the planning phase (before construction begins) and after the construction is completed. Both calculations must be equal to or better than at the bidding stage. If the result of the carbon footprint estimation carried out after the construction phase is equal to or better than in the tendering phase, the supplier will receive a bonus, while the Housing Production Department has the right to impose a sanction on the supplier if the promised performance is not achieved (European Commission, 2021^[44]).

Challenges and lessons learned

Given the small size of the market for wood construction in Finland, only two bids were received, and there were no major differences regarding the carbon footprint values. Moreover, in the evaluation process, both tenders were found not to meet all the minimum requirements, and the city entered a negotiated procedure. The proposal with more ambitious climate goals dropped out, but ultimately a satisfactory agreement for all parties was reached. The wood construction requirement was seen as raising the price to a degree, while the carbon footprint estimation and other environmental criteria were not assessed as having an effect on the price (City of Helsinki, n.d.^[46]).

Due to the urgent procurement schedule, no market dialogue took place in the pre-procurement phase. Arranging a dialogue with suppliers is quite important as new and innovative criteria are introduced in the procurement process (i.e., the carbon footprint calculation or the criteria for a fossil-free worksite). Moreover, engaging with the market and informing potential bidders about the characteristics of the tender could have increased the attractiveness of the project, as well as the price of the offers. Conducting a market dialogue is seen as essential for future projects, especially when introducing new criteria (European Commission, 2021^[44]).

Lastly, the project made it clear that to ensure that environmental and climate criteria selected for scoring have a real impact and tenderers see investing in them as sensible, the criteria must be given sufficient weighting (i.e. at least 20%) (European Commission, 2021^[44]).

Environmental results

The environmental criteria applied to the procurement as minimum requirements played an important role in reducing the environmental impact of the buildings. Buildings will be energy efficiency class A and the energy performance of the buildings will be below the regulated level. Equipping the buildings with solar power systems will increase the share of renewable energy sources and meet approximately 10% of the their electricity use. There have not been precise calculations of the carbon emission savings derived from the construction materials, but it is estimated that material-related emissions in wood construction can be approximately 20% less than for concrete constructions. In addition, the environmental criteria helped communicate Helsinki's ambitious climate goals to the market (European Commission, 2021^[44]).

Strasbourg Hospital Redevelopment Project: Integrating Reclamation into the Tender Process



In 2020 the Société d'Aménagement et d'Équipement de la Région de Strasbourg (SERS), a public developer, launched a tender process for the demolition of a hospital in Strasbourg. By integrating green public procurement methods, SERS was able to reclaim 51 tonnes of construction materials and thus minimise environmental impact.

Background: buyer, good or service, and objective

Most materials from building demolition are disposed of or recycled by crushing or melting, even though a large proportion are reusable. This approach has a high environmental cost and net economic loss (Interreg FCRBE, 2021^[47]). By integrating green public procurement considerations into the tender process for demolition projects, contracting authorities can include reclamation targets in contracts and help to minimise environmental impacts.

In 2020 the SERS launched a tender for the demolition of a 20th century hospital as part of a larger redevelopment project to transform the old hospital buildings into a new technological campus. The SERS worked with Interreg FCRBE, an EU initiative whose goal is to minimise construction waste in North West Europe². The objective of the project was to incorporate GPP considerations into the tender phase of the redevelopment, including incorporating ambitious targets for building materials reclamation and reuse (European Commission, 2022^[48]).

Process

The process of integrating reclamation into the public procurement of the project involved a number of steps. Initially, review and research was conducted to assess the feasibility of material reuse from the demolition. Information gathered from this stage then informed the minimum targets used in the tender. The final stage was the implementation of the demolition carried out by the successful bidder.

SERS worked with Rotor, a partner of the Interreg FCRBE initiative, to integrate considerations on the recovery and reuse of materials during the renovation process. Rotor created an inventory of reusable materials in the existing building as well as technical advice on how to reclaim them. It shared this information with over 40 businesses specialised in reclamation projects, soliciting them to take part in the tender process for the demolition contract. SERS worked with Rotor to set reclamation targets in the procurement specifications based on the inventory of reclaimable materials produced by Rotor and an analysis of the existence of markets for these materials (Interreg FCRBE, 2021^[47]).

During the tender phase, bidders were required to complete a reclamation audit on their expected results. Tenderers were invited to commit to achieve better reclamation rates than the minimal targets for the three main batches of reusable materials but they could also commit to reclaim other batches mentioned in the reclamation audit.

The following weighting has been applied to assess proposals:

- price (55 points)
- Technical value of the proposal (45 points), including:
 - the intervention method, including extracting of materials for the local reclamation sector and waste treatment, the specific means adopted, and the general organisation of the company (25 points)

²At the time of the project, the Interreg North West Europe Programme involved Ireland, the United Kingdom, Belgium, Luxembourg, Switzerland, and parts of France, Germany and the Netherlands.

- Volumes of reclaimed materials (10 points)
- Detailed intervention schedule (10 points)

A site visit was also organised for bidders in the tender phase. Four companies bid, each with variation in costs and impact. SAS Lingenheld, a demolition and construction company was awarded the contract based on value-for-money, though they were not the most ambitious in terms of reclamation targets. The project began in August 2020 and finished in July 2021. 51 tonnes of materials was reclaimed, including tiles from the walls and floors sold to a Dutch company and timber beams sold to a Spanish reseller specialising in antique materials (European Commission, 2022^[48]).

Results and lessons

The project was an overall success in terms of environmental impact. The most direct impacts were the reductions in waste: the 51 tonnes of materials sold on for reuse will replace new materials, reducing environmental burden. There is an ongoing discussion around whether the re-claimer or the actual re-users should be credited with the environmental benefits.

Several issues were encountered during the planning and implementation of this project. Identifying interested buyers was challenging; however, initial research from SERS and Rotor indicated that there was a market for the materials and the contractor undertook further work to find resellers (European Commission, 2022^[48]). During the implementation, careful work practices were necessary to ensure that removed materials remained intact and reusable (Interreg FCRBE, 2021^[47]).

A key lesson was that the reclamation audit should be conducted as soon as possible to allow sufficient time for a full inventory and a comprehensive integration of targets into the tender process for both the demolition and reconstruction. Additionally, the importance of monitoring contractual obligations related to reuse targets was underscored. This ensures that materials are reclaimed for reuse and not simply discarded. During the process of the deconstruction and reclamation, evidence that materials were being reused was collected and validated by the contracting authority (European Commission, 2022^[48]).

4 Green public procurement case studies in the post-tender phase

In the post-tender phase, public buyers must put in place processes and practices to ensure the public sector is able to obtain the benefits of the cost-effective and sustainable solution selected in the tender phase; however, this can be challenging for technically complex environmental criteria or where environmental impacts are distributed across the supply chain. Public buyers can apply a range of approaches to increase their insights into suppliers' practices and their supply chains. To verify complex information, public buyers can use approaches including desk research, spot-checks, or third-party verification services (auditors) (OECD, 2022^[28]).

Incorporating due diligence expectations in contracts (i.e. contract conditions) can be a meaningful way to engage with suppliers environmental due diligence. Maintaining open dialogue with suppliers, as well as setting expectations and incentives for transparency in the face of changing risk contexts can help facilitate effective and targeted risk-based monitoring. In some cases, contracts may include penalties for non-compliance. Contracting authorities should ensure these penalties are not applied for communicating risk information and findings, and that a responsible exit strategy is in place for cases where the buyer has exhausted all efforts to remedy non-compliance (OECD, 2022^[28]).

The post-tender phase can also be an opportunity to enhance performance. Monitoring serves to consolidate the benefits of GPP and provide valuable feedback for policy makers. monitoring the results of GPP is indispensable to confirm whether GPP policies work, develop strategies and adapt goals (OECD, 2015^[3]).

Case studies in contract management

Contract performance clauses for vending machines in Italy 🍏

The University of Cagliari undertook a procurement for the concessions contract for automatic vending machines. The procurement not only banned single-use plastic items, but also put in place a circular economy model in which waste is turned into new products. The contract was monitored by a specifically appointed execution manager to ensure compliance (European Commission, 2021^[49]).

Background: buyer, good or service, and objective

The University of Cagliari (UNICA) is a public higher education institution with approximately 25,000 students and 3,000 staff. UNICA is committed to promoting the reduced use of disposable plastic items, with the goal of eliminating their use entirely (European Commission, 2021^[49]). It is a member of the Network of Sustainable Universities (RUS), a national network of public and private university institutions engaged in issues of environmental sustainability and social responsibility. The main goal of RUS is to promote sustainability, both within and outside universities, through the sharing skills and experiences. The RUS has established thematic working groups that focus on topics considered important to achieving

the organisation's institutional objectives. This includes working groups on food and waste (Rete delle Università per lo Sviluppo sostenibile, n.d.^[50]).

The procurement concerned the concessions contract for spaces intended for the placement of 64 automatic vending machines. The food and beverages (both hot and cold) provided from the vending machines had to be compliant with UNICA's policies for the reduction (and eventual elimination) of plastic and sustainable waste management. The vending machines initiative also aligned with the EU plastics strategy and the EU Directive on single-use plastics (European Commission, 2021^[49]).

Process

Italy has been developing Minimum Environmental Criteria (MECs, referred to as CAMs in Italian) in public procurement for several procurement categories. The criteria, which are mandatory, were introduced to achieve the objectives set out in the National Action Plan (NAP) for Green Public Procurement in Italy (of 2007) and to promote sustainable production and consumption and circular economy models. The procurement procedure included technical specifications requiring fresh or processed food produced using organic farming methods in compliance with the MECs, as applicable in the context of vending machines (European Commission, 2021^[49]).

The contract was awarded based on the most economically advantageous tender, identified on the basis of the best price-quality ratio. The award criteria covered environmental sustainability and waste disposal, product packaging (focused on reducing plastic use) and the characteristics of packaged products and hot and cold drinks, with particular attention to organic products, lactose-free and gluten-free, no added sugar and zero-miles products.

A number of contract performance clauses associated with sustainability were included, including:

- Plastic water bottles are prohibited.
- The successful tenderer must provide the collection of coffee capsules for differentiated treatment.
- The successful tenderer is responsible for collecting the coffee residues and for delivering them to a specific company that reuses them to produce fertiliser for plants.

The contract is monitored by a specifically appointed execution manager to ensure the correctness and compliance with the contract execution clauses. Monitoring is based on the information given in the tender specifications and in the technical report submitted by the contractor. The monitoring will also be useful for the evaluation of future tender procedures in order to obtain further improvements and new ways in delivering the vending (European Commission, 2021^[49]).

Procurement outcome and environmental results

The four bidders described in their technical submissions their ability to execute the contract to bring the lowest possible impact on the environment through the application of an environmental management system and how they intended to achieve the objectives set out in the evaluation criteria. The successful bidder met all award criteria, with the winning bidder scoring 89.889/100 (European Commission, 2021^[49]).

The environmental impacts of the procurement include the elimination of single-use plastic (drinks are dispensed in containers made of 100% compostable or recyclable material), the recovery and re-use of coffee waste as fertiliser, and a reduction in CO₂ emissions as the vending machines are energy efficient (A+ and A++ energy class) (European Commission, 2021^[49]).

Contract clauses to facilitate follow-up in textile procurements in Sweden

Swedish regional governments are collaborating to address a range of sustainability risks in procurement, including environmental risks. Through clear contract clauses and targeted follow-up, they help ensure

textiles delivered to Swedish county councils and regions are manufactured under responsible and sustainable conditions throughout the supply chain.

Background: buyer, good or service, and objective

Since 2010, Swedish regional governments have been cooperating to promote sustainable supply chains through sustainable public procurement practices. Through collaboration and dialogue with suppliers, they seek to ensure that the goods and services they procure have been produced under sustainable and responsible conditions (Regionernas nationella kansli för hållbar, 2019^[51]).

Focusing on textiles, their objective is to contribute to sustainable development by ensuring that products procured by Swedish county councils and regions are manufactured under responsible and sustainable conditions throughout the supply chain. The products being procured include work clothes, curtains and furniture textiles, hospital textiles and ambulance uniforms (Regionernas nationella kansli för hållbar, 2018^[52]).

Process

The regional governments put in place measures to ensure that suppliers met their responsibilities, including harmonised contractual clauses. The clauses outline the fundamental terms to be complied with in the supply chain and the requirements for suppliers' to systematically identify and manage the risk of non-compliance. They also enable follow-up and monitoring of the requirements and outline the steps that regions may take when suppliers fail to comply with the requirements (Regionernas nationella kansli för hållbar, 2019^[51]).

Contract terms require suppliers to conduct their operations responsibly in relation to the environment and comply with local and national environmental legislation. Through a structured and systematic approach, suppliers must aim to continually improve their environmental performance and minimise resource use and waste production.

To ensure that suppliers are meeting these obligations, the regional governments use risk assessments to determine where enhanced due diligence is required. Periodic audits are complemented by ongoing monitoring and regular information provision by the supplier (OECD, 2022^[28]). Factors in the risk assessment include the sourcing country and its policies. The regional governments have joint procedures for following up contractual terms concerning sustainable supply chains. The responsibility for follow-up within the prioritized risk areas is allocated nationally in order to ensure the effective use of resources (Regionernas nationella kansli för hållbar, 2019^[51]).

When a follow-up is initiated, the responsible region collects agreements from all other regions relating to the selected supplier and conducts a joint national follow-up. The follow-up verifies that the supplier has procedures in place in accordance with the contractual terms, and that these procedures are applied to contracted products. This is achieved by having the supplier complete a self-assessment and present its internal processes and procedures, as well as having the regions, either themselves or through an external auditor, conduct an audit at the supplier's offices. During the audit, the procedures and their implementation are reviewed in more detail (Regionernas nationella kansli för hållbar, 2019^[51]).

In some instances, the regions may choose to perform a factory audit at either the supplier's own operations or at the operations of its sub-contractors. Factory audits help to ensure that procedures are effective in practice and that the full supply chain is in compliance with the contract terms. The contractual terms require suppliers to facilitate factory audits. A factory audit can include interviewing workers, inspecting the premises, reviewing documents, as well as off-site interviews and interviews with local organisations (Regionernas nationella kansli för hållbar, 2019^[51]).

If a follow-up reveals non-compliance, the action phase is initiated. During the action phase, the supplier is given an opportunity to remedy any non-compliance, including drawing up an action plan with a time plan for implementation. The focus is on development and improvement, carried out in close collaboration between the regions and the supplier. The contractual terms include consequences where the supplier does not remedy non-compliance in accordance with the adopted action plan. These can include removing the right to receive call-off requests under the framework agreement until the non-compliance has been rectified or, if necessary, terminating the contract (OECD, 2022^[28]).

When an audit has been performed, a summary of the audit findings is drafted, which is subsequently shared with all regions as well as with other procurement stakeholders. The summary presents essential information about the follow-up, such as the type of follow-up conducted as well as the results of the audit. (Regionernas nationella kansli för hållbar, 2019^[52]).

Results and lessons

In contrast to a compliance-heavy approach, maintaining open dialogue with suppliers and focusing on remedying breaches can help facilitate effective and targeted risk-based monitoring. Contracting authorities can establish in the contract that the supplier is required to continuously conduct due diligence of the supply chains and be explicit on what data and indicators of due diligence is required (OECD, 2022^[28]).

Measuring the impact of low carbon, sustainable catering services in Turin 🍏

To ensure that it was on track to achieve a low carbon school catering service and to identify areas for continuous improvement, Turin commissioned a study to monitor its current catering contract and evaluate its carbon footprint.

Background: buyer, good or service, and objective

School catering is a significant part of the procurement budget for the City of Turin: approximately eight million meals are delivered annually to 71,500 students with a total value of approximately €40 million. The procurement for the overall school catering service is subdivided into eight lots, with each lot covering a different geographical area. The lots were awarded to three different suppliers. Turin has introduced several measures into its school catering contracts aimed at reducing the associated environmental impact, including the use of energy-efficient appliances (primarily ovens and dishwashers), the use of tap water, the use of low environmental-impact transportation and a significant reduction in packaging and waste (Cerutti et al., 2016^[53]).

The municipality commissioned the University of Turin to monitor and evaluate the carbon footprint of the school catering service. The aim of the study was to quantify the climate change reduction potential of three GPP policies introduced in the school catering contract. The three GPP policies focused on (Toldo, 2019^[54]):

1. The production process of purchased food (a requirement for organic products)
2. The geographic origin of the food (a requirement of regional food provisioning)
3. Reducing the impacts of urban distribution (a requirement to shift from petrol to natural gas vehicles)

Process

A preliminary analysis of the catering service structure was performed to obtain an overview of the system. Only fruit and vegetable products could be selected as case studies because all three GPP policies were only applied for these products (e.g., for animal-based products organic production was not a tender

requirement). Five of the highest consumption fruit and vegetables were chosen to test the climate change reduction performance of the three policies (Cerutti et al., 2016^[53]).

Suppliers were engaged in order to collect relevant data. The carbon footprint calculation methodology used a life cycle assessment approach aligned with the guidelines and recommendations of ISO 14040, which expressed the quantity of GHG (CO₂ equivalent) released, directly and indirectly, during all stages of the system (European Commission, 2014^[54]).

The preliminary analysis revealed that the three GPP policies were related to different parts of the food procurement supply chain. Therefore, the three phases (production, provisioning, distribution) were studied separately. The study was conducted over 6 months and involved 254 public administrations of the Metropolitan City of Turin (of a total of 315) (Toldo, 2019^[54]).

Results and lessons

The study found that the production phase is dominant in terms of carbon emissions, comprising between 69% and 77% for fruit and between 53% and 68% for vegetables. The application of the GPP policies in this phase reduced carbon emissions by an average of 15% to 22% for fruits and 22% to 28% for vegetables. Therefore, policies that affect production practices are those with the highest potential for reducing the carbon footprint. By contrast, policies targeting the provisioning phase focused on a minor share of GHG emissions in the overall supply chain (Cerutti et al., 2016^[53]).

The GHG emission share of urban food distribution was also high (24% to 28% of the total carbon footprint) and pointed to further possibilities for GHG emission reductions in the urban part of the supply chain. Nevertheless, the study found that shifting from petrol to natural gas is not an efficient measure for reducing GHG emissions. Instead, logistic organisation plays a major role in the GHG emissions of the urban part of the supply chain and changes in food hubs and distribution routes had a greater impact. The results suggested that simply using transport distance as an award criterion was not effective but suggested instead calculating the climate impacts of the transportation process (Cerutti et al., 2016^[53]).

The cooperation with suppliers was also found to have worked very well. Turin will monitor and calculate the carbon footprint of the actual contract and work to redesign the school catering service towards a “zero emission model”. The City will decide whether to apply this evaluation model more widely to calculate the entire environmental footprint (ecological, carbon, water) of the catering service (European Commission, 2014^[55]).

Case studies in order and payment

Food Waste Prevention in Mayo General Hospital 🍏

By implementing a series of practical, specific measures tied to ongoing monitoring and reporting of KPIs, Mayo General Hospital in Ireland has been able to significantly reduce waste under its food services contract.

Background: buyer, good or service, and objective

The Green Healthcare Programme (GHCP), run by the Irish National Health Sustainability Office, helps prevent waste, increase recycling, and reduce water consumption in Irish Hospitals. The programme provides direct advice and assistance to Irish healthcare facilities, including on-site surveys, benchmarking and customised advice (Green Healthcare Programme, n.d.^[56]).

Mayo General Hospital is an Irish 265-bed hospital providing a wide range of in-patient and out-patient services including surgical, emergency, maternity, dialysis, and oncology. The GHCP undertook a detailed

survey of the food provision system in Mayo General Hospital, with the hospital observed to have one of the lowest levels of food wastage of all the 22 facilities in which a food waste survey was undertaken. The Hospital operates a cook-chill system where food is prepared in the main catering kitchen, chilled and then provided in bulk containers to individual hospital ward kitchens. The chilled food is heated to serving temperature in trolleys and then plated to patient's requirements. Food services are provided by an external food contractor. The food provision contract includes the requirement to meet a number of key performance indicators (KPIs), including waste generation levels.

Some food waste is inevitable in a hospital setting. For example, patients may not be well enough to finish the meals they have ordered, or patients may be discharged early, making already prepared meals surplus to requirements. However, the GHCP has found that there is always scope for reducing food waste, regardless of the type of patient food system in operation and in many instances before meals reach patients (Green Healthcare Programme, 2020^[57]).

Process

Mayo General Hospital sought to reduce and prevent food waste generated in the provision of patient meals, staff and visitor meals in the public canteen while ensuring that nutrition and quality were not compromised. In the food provision contract, they included a number of KPI to be met by the supplier related to budget, nutritional requirement, waste generation levels and patient satisfaction (European Hospital and Healthcare Federation, n.d.^[58]).

Working with its external food services provider, the Hospital has implemented practical, specific measures to reduce food waste, including (Green Healthcare Programme, 2020^[57]):

- **Ordering of food:** surveys found that patients can quickly lose their appetite when presented with large portions. The first choice to be filled in on the Hospital's menu is the option of ordering a small portion, which is highlighted in bold text to make it more obvious to patients. This ensures patients get the appropriate meal size and excess food is not provided.
- **Portioning of main meal components:** catering staff and hospital nutritionists work to ensure that the correct meal size is provided to patients to meet their nutritional requirements, in line with national guidelines. It can be difficult to ensure that the right sized portion of foods made in bulk (e.g. casseroles) is provided. Staff in the main kitchen, who are aware of the required portion size, pre-portion this type of food and there is no confusion for staff plating food in the ward kitchens.
- **Providing only the number of portions required:** In many facilities, full trays of certain food are provided to wards even when only a small number of portions have been ordered. This is seen as unavoidable due to the limited size of containers available to fit ovens (only larger trays will fit the oven) and the excessive time that would be required to portion the food. Mayo General Hospital determined that staff costs for the time required to portion the food is more than compensated for by the savings from reducing the quantity of excess food prepared and consequently wasted, and therefore actively portions these types of meals and provides only the required number of portions to the wards in a smaller container.
- **Ensure the right quantity of meal 'side' components is provided:** The GHCP has found that a large proportion of meal 'side' components (e.g. potatoes, vegetables) are not served to patients resulting in food waste. The Hospital undertook detailed work to determine the correct quantity of these foods that should be provided for each patient. Different sized containers were filled with the foods and weighed to determine how many portions they contained. Based on the number of normal and small portions that are required, staff filling the food trolleys determine the number of portions of sides that are required, and provides the right sized container to the ward.
- **The automatic provision of condiments:** Automatically providing condiments such as butter and marmalade) can result in a significant amount of waste. In general, these condiments must be

disposed of for infection control reasons, even if unused. To overcome this, the Hospital provides options on menus for patients to specify what condiments they require.

Environmental results

The continual monitoring, and reporting to management of the KPIs by the external provider helps ensure that patients, visitors and staff are provided with an efficient, low food waste catering service. The good practices implemented by the Hospital result in the generation of a low level of segregated food waste: a study to determine the level of food waste in general landfill waste bags found that bags from Mayo General Hospital contained 75% less food waste than the average for comparable acute facilities. 26% of the food provided to Mayo General Hospital was disposed of as food waste compared to 49% of the food provided in the average comparable acute facility. Mayo General Hospital produced 0.28 kg less segregated food waste per bed day than the average GHCP acute facility, equating to estimated savings of 24 tonnes of food waste and cost savings of €48,000 per annum (Green Healthcare Programme, 2020^[57]).

References

- Alfieri, F. et al. (2021), *Revision of the EU Green Public Procurement (GPP) Criteria for Computers and Monitors (and extension to Smartphones)*, Publications Office of the European Union, https://ec.europa.eu/environment/gpp/pdf/210528_jrc124294_jrc124294_technical_report_gpp_computers_final_with_identifiers.pdf. [9]
- Baron, R. (2016), *The role of public procurement in low-carbon innovation*, <https://www.oecd.org/sd-roundtable/papersandpublications/The%20Role%20of%20Public%20Procurement%20in%20Low-carbon%20Innovation.pdf>. [11]
- Boyano Larriba, A. et al. (2019), *EU GPP criteria for Food procurement, Catering Services and Vending Machines*, Publications Office of the European Union, <https://doi.org/10.2760/748165>. [20]
- Cartwright, J. (2016), *People Centred, Low Carbon Catering Solution*, <https://noharm-europe.org/documents/john-cartwright-people-centred-low-carbon-catering-solution%0B-presentation>. [44]
- Cerutti, A. et al. (2016), "Carbon footprint in green public procurement: Policy evaluation from a case study in the food sector", *Food Policy*, Vol. 58, <https://doi.org/10.1016/j.foodpol.2015.12.001>. [54]
- City of Helsinki (2018), *The Carbon-neutral Helsinki 2035 Action Plan*, City of Helsinki, http://carbonneutralcities.org/wp-content/uploads/2019/06/Carbon_neutral_Helsinki_Action_Plan_1503019_EN.pdf. [46]
- City of Helsinki (n.d.), *Case: Asetelmakatu Project*, <https://www.hel.fi/static/liitteet/kaupunkiymparisto/ilmastoteot/hankkeet/canemure/case-Asetelmakatu-DB-project.pdf>. [47]
- Consorci de la Ribera (2018), *Tender for innovation in exterior carpentry for the rehabilitation of the "Magatzem de Cucó" (Alzira)*, <https://ted.europa.eu/TED/notice/udl?uri=TED:NOTICE:252168-2018:HTML:ES:HTML&tabId=1&tabLang=es> (accessed on 10 November 2022). [39]
- Deconinck, K. and M. Hobeika (2022), "Improving environmental outcomes along food supply chains: A review of initiatives and their effectiveness", *OECD Food, Agriculture and Fisheries Papers*, <https://doi.org/10.1787/d549eb43-en>. [22]
- Department for Environment & Rural Affairs (2013), *London 2012 Olympic and Paralympic Games The Legacy: Sustainable Procurement for Construction Projects*, [30]

- https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/224038/pb13977-sustainable-procurement-construction.PDF.
- Dodd, N. and M. Gama Caldas (2017), *Revision of the EU Green Public Procurement (GPP) Criteria for Textile Products and Services: Technical report with final criteria*, Publications Office of the European Union, https://ec.europa.eu/environment/gpp/pdf/criteria/textiles_gpp_technical_report.pdf. [16]
- Dodd, N., E. Garbarino and M. Caldas (2016), *Green Public Procurement Criteria for Office Building Design, Construction and Management*, European Commission, <https://doi.org/10.2791/28566>. [24]
- European Commission (2022), *Adopting circular economy principles: Setting reclamation targets in a redevelopment tender*, https://ec.europa.eu/environment/gpp/pdf/news_alert/Issue114_NewsAlert_CaseStudyStrasbourg.pdf. [49]
- European Commission (2022), *National GPP Action Plans (policies and guidelines)*, https://ec.europa.eu/environment/gpp/pdf/GPP%20NAPs_April%202022.pdf (accessed on 10 November 2022). [28]
- European Commission (2022), *Procuring sustainable computers, printers and related services*, European Commission, https://ec.europa.eu/environment/gpp/pdf/news_alert/Issue111_NewsAlert_CaseStudyARPAT.pdf. [32]
- European Commission (2021), *Procurement of low-carbon residential buildings using life-cycle assessment criteria*, https://ec.europa.eu/environment/gpp/pdf/news_alert/Issue_104_Case_Study_193_Helsinki.pdf. [45]
- European Commission (2021), *Vending machines for food and beverages*, https://ec.europa.eu/environment/gpp/pdf/news_alert/Issue_107_Case_Study_197_Cagliari.pdf. [50]
- European Commission (2020), *Making socially responsible public procurement work: 71 good practice cases*, European Commission, <https://doi.org/doi/10.2826/7096>. [10]
- European Commission (2019), *Renovating the façade of an unused warehouse as part of plans for a sustainable Youth Centre*, https://ec.europa.eu/environment/gpp/pdf/news_alert/Issue_92_Case_Study_175_Ribera.pdf. [38]
- European Commission (2016), *Buying green! A handbook on green public procurement (3rd ed.)*, European Commission, <https://ec.europa.eu/environment/gpp/pdf/Buying-Green-Handbook-3rd-Edition.pdf>. [2]
- European Commission (2015), *GPP in practice: People centred, low carbon healthcare catering solution*, https://ec.europa.eu/environment/gpp/pdf/news_alert/Issue55_Case_Study113_Rotherham_healthcare.pdf. [41]
- European Commission (2014), *Monitoring low carbon, sustainable catering services*, https://ec.europa.eu/environment/gpp/pdf/news_alert/Issue47_Case_Study100_Turin.pdf. [56]

- European Commission (2012), *Green Public Procurement: A Collection of Good Practices*, European Commission, <https://data.europa.eu/doi/10.2779/93178>. [36]
- European Commission (2008), *Food and Catering Services: Background Product Report*, https://ec.europa.eu/environment/gpp/pdf/toolkit/food_GPP_background_report.pdf. [23]
- European Commission (2008), *Public procurement for a better environment*, European Commission, <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0400:FIN:EN:PDF>. [1]
- European Commission (n.d.), *Connecting local action with global & European initiatives*, <https://eu-mayors.ec.europa.eu/en/about> (accessed on 10 November 2022). [40]
- European Commission (n.d.), *Green public procurement: Life-cycle costing*, <https://ec.europa.eu/environment/gpp/lcc.htm> (accessed on 15 November 2022). [8]
- European Commission (n.d.), *Sustainable uniforms for the French Navy*, https://ec.europa.eu/environment/gpp/pdf/news_alert/Issue16_Case_Study38_France_uniforms.pdf (accessed on 22 March 2022). [37]
- European Environment Agency (2022), *Textiles and the environment: the role of design in Europe's circular economy*, European Environment Agency, <https://www.eea.europa.eu/publications/textiles-and-the-environment-the>. [19]
- European Hospital and Healthcare Federation (n.d.), *Sustainable Nutrition: Mayo General Hospital (Ireland) Reduces Food Waste*, <https://hope.be/wp-content/uploads/2021/06/Mayo-General-Hospital-Ireland-.pdf> (accessed on 10 November 2022). [59]
- Green Healthcare Programme (2020), *Case Study: Mayo General Hospital*, <https://greenhealthcare.ie/wp-content/uploads/2014/05/Case-Study-Food-Waste-Mayo-General-Hospital-revised.pdf>. [58]
- Green Healthcare Programme (n.d.), *About Us*, <https://greenhealthcare.ie/privacy/> (accessed on 10 November 2022). [57]
- Henson, K. (2011), *The procurement and use of sustainable concrete at the Olympic Park*, Olympic Delivery Authority, <https://webarchive.nationalarchives.gov.uk/ukgwa/20130228085355mp/http://learninglegacy.london2012.com/documents/pdfs/procurement-and-supply-chain-management/01-concrete-pscm.pdf>. [31]
- Innovation for Sustainable Development Network (2019), *Installation of heat pumps to recover waste-heat from the City Hall servers and reuse it for space heating and domestic hot water needs*, <https://www.inno4sd.net/installation-of-heat-pumps-to-recover-waste-heat-from-the-city-hall-servers-and-reuse-it-for-space-heating-and-domestic-hot-water-needs-537> (accessed on 16 November 2022). [35]
- Interreg FCRBE (2021), *NEXTMED Des matériaux de construction du début du 20e siècle prisés par la filière du réemploi*, https://www.nweurope.eu/media/15737/nextmed_factsheet.pdf. [48]
- Miljøstyrelsen (2018), *Well Dressed in a Clean Environment: Overview of six projects carried out under the Nordic action plan for sustainable fashion and textiles*, Miljøstyrelsen, <https://eng.mst.dk/media/189665/welldressed-in-a-clean-environment.pdf>. [17]

- Miljøstyrelsen (2013), *Green Procurement and Green Products Generate Growth*, [34]
<https://mst.dk/media/mst/68594/All%20cases%20UK%20endelig.pdf>.
- Nikolina Šajin (2019), *Environmental impact of the textile and clothing industry*, European [18]
 Parliamentary Research Service,
[https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI\(2019\)633143_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2019/633143/EPRS_BRI(2019)633143_EN.pdf).
- OECD (2022), "Life-Cycle Costing in Public Procurement in Hungary: Stocktaking of Good [5]
 Practices", *OECD Public Governance Reviews*, <https://doi.org/10.1787/8d90f627-en>.
- OECD (2022), *Pilot on Integrating OECD Due Diligence into Public Procurement in the Garment [29]
 Sector*, OECD.
- OECD (2022), *Setting the scene for decarbonising buildings*, OECD Publishing, [25]
<https://doi.org/10.1787/5bdf5a5e-en>.
- OECD (2022), "Towards Agile ICT Procurement in the Slovak Republic: Good Practices and [14]
 Recommendations", *OECD Public Governance Reviews*, <https://doi.org/10.1787/b0a5d50f-en>.
- OECD (2021), *Building sustainable dwellings, neighbourhoods and communities*, OECD [26]
 Publishing, <https://doi.org/10.1787/41539e2c-en>.
- OECD (2021), *Unlocking the Strategic Use of Public Procurement in Bratislava, Slovak Republic*, [27]
 OECD Publishing, <https://doi.org/10.1787/d616e4d9-en>.
- OECD (2019), "Reforming Public Procurement: Progress in Implementing the 2015 OECD [6]
 Recommendation", *OECD Public Governance Reviews*, <https://doi.org/10.1787/1de41738-en>.
- OECD (2015), *Going Green: Best Practices for Sustainable Procurement*, OECD Publishing, [3]
https://www.oecd.org/gov/ethics/Going_Green_Best_Practices_for_Sustainable_Procurement.pdf.
- OECD (2015), *OECD Recommendation of the Council on Public Procurement*, [4]
<https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0411>.
- OECD (2010), *Eco-Innovation in Industry: Enabling Green Growth*, OECD Publishing, [12]
<https://doi.org/10.1787/9789264077225-en>.
- OECD (Forthcoming), *Survey on Green Public Procurement*. [7]
- Regione Toscana (2020), *Fornitura di beni e servizi per la gestione integrata delle Postazioni di [33]
 Lavoro (PdL) e fornitura di software tecnico professionale*,
<https://start.toscana.it/tendering/tenders/011883-2020/view/detail/1> (accessed on
 4 November 2022).
- Regionernas nationella kansli för hållbar (2019), *Sustainable supply chains: Guidelines [52]
 contractual terms*, <https://www.xn--hllbarupphandling-8qb.se/images/GuidelinesContractualTerms.pdf>.
- Regionernas nationella kansli för hållbar (2018), *Action Plan for Textiles*, <https://www.xn--hllbarupphandling-8qb.se/lista-kategorier/file/98-action-plan-for-textiles>. [53]
- Rete delle Università per lo Sviluppo sostenibile (n.d.), *About Working Groups*, [51]
<https://reterus.it/en/about-working-groups/> (accessed on 10 November 2022).

- Rotherham NHS Foundation Trust (2012), *People centred low carbon catering: Market sounding and call for innovative solutions*, [43]
<https://www.therotherhamft.nhs.uk/WorkArea/DownloadAsset.aspx?id=2385>.
- StratKIT (2020), *Joint Baltic Sea Region Report for Sustainable Public Procurement and Catering Services*, Interreg BSR Programme, [21]
https://www.sustainable-public-meal.eu/documents/14/Joint_BSR_Report_for_Sustainable_PPCS.pdf.
- Toldo, A. (2019), "Public Procurement E Ristorazione Collettiva: Le Mense Scolastiche Come Strumento di Sostenibilità dei Sistemi Alimentari", *Bollettino Della Società Geografica Italiana*, Vol. 10, [55]
<https://doi.org/10.13128/bsgi.v10i1-2.500>.
- UK Corporate Leaders Group on Climate Change (2012), *Down to zero: Joint Public private low carbon procurement compacts*, [42]
<https://www.cisl.cam.ac.uk/system/files/documents/down-to-zero-procurement-compact-prospectus.pdf>.
- van der Merwe, A. and F. Brugger (2021), *Case study: The digital device life cycle: From mining to e-waste*, OECD Publishing, [13]
<https://doi.org/10.1787/31d11f68-en>.
- Watson, D. and R. Fisher-Bogason (2017), *Greener Textiles in Hospitals: Guide to green procurement in the healthcare sector*, Nordic Council of Ministers, [15]
<http://dx.doi.org/10.6027/ANP2017-717>.